INTRODUCTION

Site Location

The West Valley Demonstration Project (WVDP or Project) is located in western New York State, about 30 miles (50 kilometers [km]) south of Buffalo, New York (Fig. INT-1). The WVDP facilities occupy a security-fenced area of about 167 acres (68 hectares [ha]) within the 3,338-acre (1,351 ha) Western New York Nuclear Service Center (WNYNSC) located primarily in the town of Ashford in northern Cattaraugus County. The security-fenced area is referred to as the Project premises.

General Environmental Setting

Climate. Although extremes of 98.6°F (37°C) and -43.6°F (-42°C) have been recorded in western New York, the climate is moderate, with an average annual temperature (1971–2000) of 48°F (8.9°C). Precipitation is markedly influenced by Lake Erie to the west and, to a lesser extent, by Lake Ontario to the north. Regional winds are generally from the west and south at about 9 miles per hour (mph) (4 meters/second [m/sec]).

Ecology. The WNYNSC lies within the northern deciduous forest biome, and the diversity of its vegetation is typical of the region. Equally divided between forest and open land, the site provides a habitat especially attractive to white-tailed deer and various indigenous migratory birds, reptiles, and small mammals. No species on the federal endangered species list are known to reside on the WNYNSC.

Geology and Hydrology. The Project lies on New York State's Allegheny Plateau at an average elevation of about 1,300 feet (400 meters [m]). The underlying geology includes a sequence of glacial sediments above shale bedrock. The Project is drained by several small streams and is divided by a stream valley into two general areas: the north plateau and the south plateau.

Frank's Creek, which enters the site from the south and flows northward, receives drainage from the south plateau. As Frank's Creek progresses northward, it is joined by tributaries Erdman Brook (between the south and north plateaus) and Quarry Creek (north of the Project's fenceline). Frank's Creek continues northward across the WNYNSC and flows into Buttermilk Creek, which leaves the WNYNSC and enters Cattaraugus Creek. (See Figs. A-1 and A-5.) Cattaraugus Creek ultimately drains into Lake Erie, to the northwest.

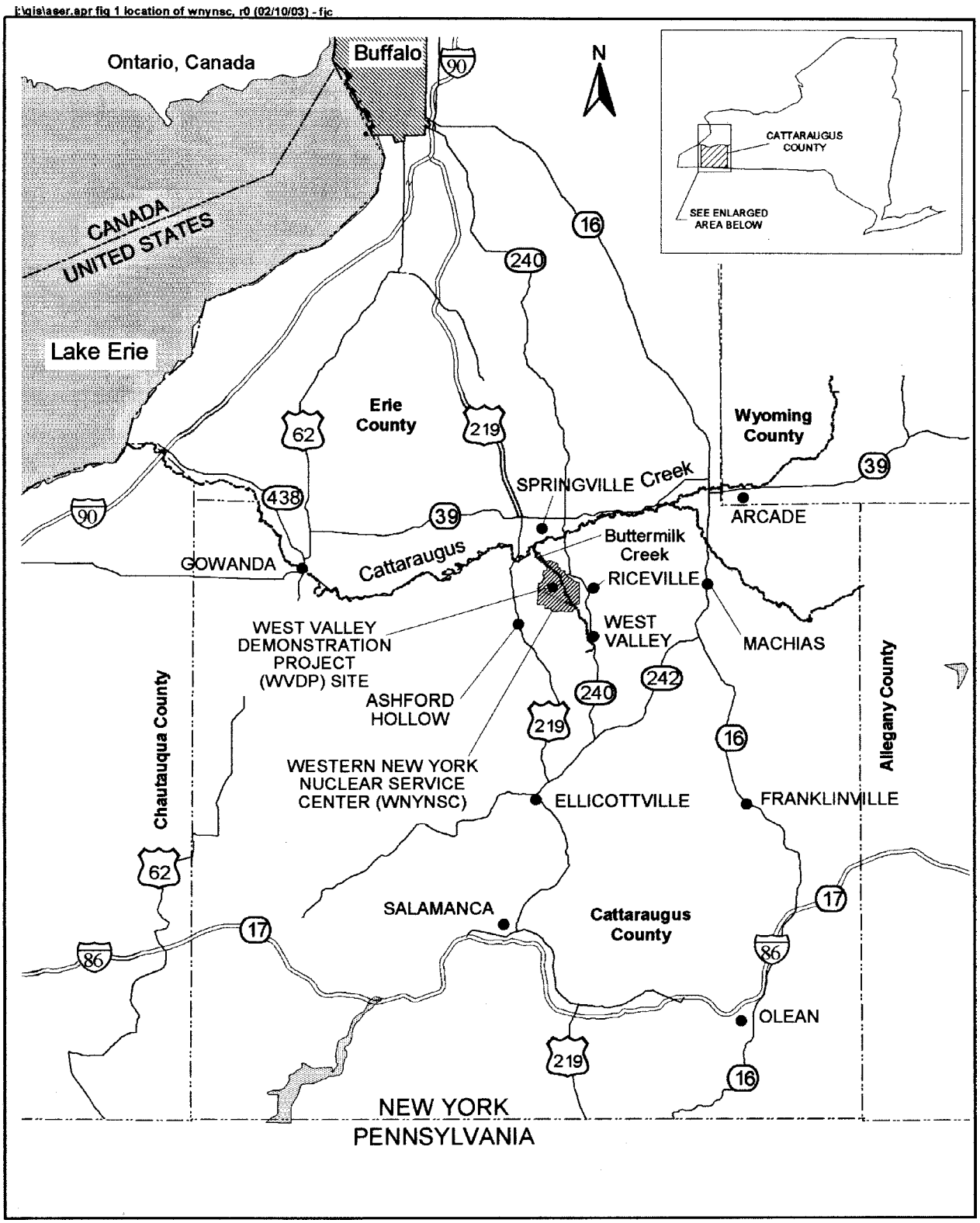

Figure INT-1. Location of the Western New York Nuclear Service Center

Site Mission

The facility that later became the WVDP was the site of a commercial nuclear fuel reprocessing plant run by Nuclear Fuel Services, Inc. (NFS) from 1966 until 1972. Uranium and plutonium were recovered from spent nuclear fuel for reuse. In 1972, the reprocessing facility closed for expansion, but in 1976 NFS notified the New York State Energy Research and Development Authority that it was no longer economically feasible to continue in the fuel-reprocessing business and the plant was shut down. In 1980, Public Law 96-368 (the West Valley Demonstration Project Act) was passed. This Act authorized the United States Department of Energy to demonstrate a method for solidifying 600,000 gallons (2.3 million liters) of liquid high-level radioactive waste (HLW) that remained at the West Valley site. (For a detailed history of the site, see the Introduction of the 2003 Annual Site Environmental Report. See Table K-3 CD for the complete text of the WVDP Act.)

The purposes of the WVDP Act were to carry out the following activities: solidify the HLW that was left at the site from the original nuclear fuel reprocessing activities; develop suitable containers for holding and transporting the solidified waste; transport, in accordance with applicable provisions of law, the waste solidified at the WNYNSC to an appropriate Federal repository for permanent disposal; dispose of any low-level and transuranic radioactive waste resulting from the solidification of HLW; and decontaminate and decommission Project facilities used for solidification of radioactive waste.

Vitrification of the HLW, begun in 1996, was completed in September 2002. Activities for decontaminating the vitrification and support facilities and for disposing of wastes were then initiated and continue through the present.

Primary Operations and Activities

The following projects were initiated, continued, or completed in 2005:

Vitrification Facility Dismantlement Project. In 2005, the remainder of the equipment in the vitrification cell was dismantled and removed. Completion of this effort made the WVDP the first site in the nation to design, construct, operate, shut down, and dismantle a full-scale radioactive vitrification system.

Remote-Handled Waste Facility (RHWF). The new RHWF, which began processing radioactive waste in June 2004, was used throughout 2005 to prepare higher-activity wastes for shipment and disposal. Four boxes of mixed waste from the chemical process cell waste storage area were removed and processed in the RHWF in 2005.

Waste Characterization, Packaging, and Shipping. Upgrades were made to several facilities and areas on site to support new or increased activities to prepare Class A low-level waste (LLW) for off-site shipment. Characterization of the waste streams (wastes that came from the same point of origin or that had similar physical characteristics) continued throughout 2005, and shipments of waste off site took place by truck and rail. In 2005, more than 300,000 cubic feet (8,500 cubic meters) of LLW were shipped.

Infrastructure Reduction. Office personnel were relocated to new offices on and off the WVDP. Temporary office trailers, connecting hallways, and ancillary structures, 115 units in all, were removed from the site. Excess office components and furnishings were removed and dispositioned through the government excess process by a combination of surplus sales, transfers of property, and donations.

Environmental Monitoring. The primary focus of the WVDP's environmental monitoring program is to detect and evaluate changes in the environment resulting from Project (or pre-Project) activities and to assess the effect of any such changes on the human population.

Among the factors considered in designing the environmental monitoring program were the types of wastes and other by-products resulting from the processing of HLW; possible pathways for movement of contaminants into the environment; geologic, hydrologic, and meteorologic site conditions; quality assurance standards for monitoring and sampling procedures and analyses; and the limits and standards set by federal and state governments and agencies. (For more information on the design of the environmental monitoring program, see "Environmental Monitoring Program" and "Exposure Pathway Monitoring" in the Introduction of the 2003 Annual Site Environmental Report.) Results of the 2005 monitoring program are discussed in Chapters 2, 3, and 4 of this report.

Relevant Demographics

Although several roads and a railway approach or pass through the WNYNSC, the public does not have access to the Project grounds. Deer hunting may be allowed (a year-to-year decision), but fishing and human habitation on the WNYNSC are prohibited.

Land near the WNYNSC is used primarily for agriculture and arboriculture. Downstream of the WNYNSC, Cattaraugus Creek is used locally for swimming, canoeing, and fishing. Although some water is taken from the creek to irrigate nearby golf course greens and tree farms, no public drinking water is drawn from the creek before it flows into Lake Erie. Water from Lake Erie is used as a public drinking water supply.

The communities of West Valley, Riceville, Ashford Hollow, and the village of Springville are located within approximately 5 miles (8 km) of the Project. The nearby population, approximately 9,200 residents within 6.2 miles (10 km) of the Project, relies largely on an agricultural economy. No major industries are located within this area. The WVDP is one of the largest employers in Cattaraugus County.